

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF LOUISIANA
SHREVEPORT DIVISION

UNITED STATES OF AMERICA and
STATE OF LOUISIANA

Plaintiffs,

CANADIANOXY OFFSHORE
PRODUCTION CO.,

Defendant.

CIVIL ACTION NO. _____

APPENDIX B
STATEMENT OF WORK
HIGHWAY 71/72 REFINERY SITE
BOSSIER CITY, LOUISIANA

I. INTRODUCTION

1. This Statement of Work (SOW) is Appendix B to the Consent Decree styled United States of America and State of Louisiana v. CanadianOxy Offshore Production Co., Civil Action No. _____ (the "Consent Decree").

2. Settling Defendant CanadianOxy Offshore Production Co. (the "Settling Defendant") shall perform all the Work that is described in this SOW. Settling Defendant shall perform the Work in order to design, construct, operate and maintain the remedy selected by the U.S. Environmental Protection Agency ("EPA") in EPA's September 28, 2000, Record of Decision ("ROD") to address the release of hazardous substances at the Highway 71/72 Refinery Superfund Site (the "Site").

3. As explained in Section V (Work to Be Performed) of this SOW, in order to fulfill the Work requirements of Section VI (Performance of the Work by Settling Defendant) of the Consent Decree, in addition to other Work described in the Consent Decree and this SOW, the Settling Defendant shall generally do the following: i) prepare a written Remedial Design Work Plan; ii) implement the Remedial Design Work Plan, once it is approved by EPA, in order to produce a written Draft Remedial Design and a written Pre-Final Remedial Design (the Pre-Final Design becomes the Final Remedial Design once it is approved by EPA); iii) prepare a written

Remedial Action Work Plan which will have written plans for construction of the remedy according to the EPA-approved Remedial Design, and which will also have written plans for operation and maintenance (O&M) of the constructed remedy; and iv) construct, operate, and maintain the remedy according to the EPA-approved Remedial action work plan.

4. Settling Defendant shall prepare or perform a Remedial Design Work Plan, a Draft and a Pre-Final Remedial Design, a Remedial Action Work Plan, a Remedial Action, and O&M that will address all of the elements of the ROD that are summarized in the bulleted items that appear on pages 12-1 and 12-2 of the ROD.¹ These elements are as follows:

- Sampling for lead in Surface Soil² and sampling for hydrocarbons in Surface and Subsurface Soils at the request of on-site community members;
- Cleanup of lead-contaminated Surface Soil discovered during requested sampling or uncovered during earthmoving activities;
- Cleanup of hydrocarbon-contaminated Surface and Subsurface Soil discovered during requested sampling or uncovered during earthmoving activities;
- Sampling for benzene in indoor air at the request of on-site community members;
- Mitigation of indoor air contamination discovered through requested sampling;
- Periodic notification of the on-site community of potential contamination, of available services, and of ground water use restrictions;
- Implementation of ground water use restrictions;³
- Environmental monitoring of LNAPL, ground water, and indoor air; and
- Enhanced LNAPL recovery by dual phase extraction (Plumes A, B, C, and D), including LNAPL recycling/reuse or disposal and treatment or disposal of co-extracted ground water and vapors.

II. ROLE OF EPA

¹The bulleted items on pages 12-1 and 12-2 summarize the principal elements of the selected remedy. These elements are described throughout the ROD, the most notable descriptions appear on pages 12-2 through 12-5, but other ROD sections also explain these elements. Hereinafter these elements are referred to as the Remedy Elements.

² For purposes of this SOW, the term "Surface Soil" is defined to include soil from 0 to 2 feet below ground surface (bgs), and the term "Subsurface Soil" is defined to include soil from 2 feet bgs to the water table. As described in the ROD at page 5-4, EPA's estimates of the Subsurface Soil remedy are based on excavation from 2 feet bgs to the depth of the water table. The ROD recognizes that depth to the water table varies within the Site but identifies the average depth to water table as 10 feet bgs. For purposes of excavation and sampling of Subsurface Soil, the depth to the water table will be determined on a case-by-case basis using methodology consistent with that used in the ROD. Any on-site determination of depth to water table shall be subject to review and approval by EPA or its designated agent.

³The City of Bossier City has implemented ground water use restrictions by city ordinance.

5. EPA's approval of deliverables, including, but not limited to, submissions, is administrative in nature and allows the Settling Defendant to proceed to the next steps in implementing the Work. EPA's approval does not imply any warranty of performance, nor does it imply that the Work including without limitation the Remedial Design and Remedial Action, when completed, will meet Performance Standards nor does it imply that the Work will function properly and be ultimately accepted by EPA. Pursuant to Section XI (EPA Approval of Plans and Other Submissions) of the Consent Decree, EPA retains the right to disapprove submissions including without limitation submissions associated with the Remedial Design and Remedial Action Work. EPA may disapprove deliverables including, but not limited to, submissions concerning such matters as the contractor selection, plans and specifications, work plans, processes, and any other deliverables within the context of the Consent Decree including without limitation this SOW. In many instances deliverables including without limitation submissions required by this SOW are described in very broad terms; however, it is the Parties intention, and Settling Defendant agrees, that Settling Defendant shall timely confer with the EPA Remedial Project Manager (RPM) regarding these broadly described deliverables, and that Settling Defendant shall complete these deliverables according to directions given by the RPM.

6. It is a requirement of the Consent Decree for Settling Defendant to submit submissions which EPA will approve. If any Submission is not approved by EPA, Settling Defendant shall be in violation of the Consent Decree.

III. PERFORMANCE STANDARDS

7. The Performance Standards for the Work shall include substantive requirements, criteria, or limitations which are specified in the ROD, the Consent Decree, the SOW, and in EPA-approved submissions. Settling Defendant shall perform the Work to meet Performance Standards. The Performance Standards include the Remediation Goals which are described below in this section of the SOW:

Lead in Soil

j. If, during sampling or excavation performed as part of the Remedial Action, Settling Defendant discovers lead in Surface Soil, Settling Defendant shall excavate all Surface Soil containing concentrations of lead greater than 510 parts lead per million parts soil (ppm).⁴ 510 ppm is the lead remediation goal for Surface Soil.

⁴As described in the ROD on page 5-4, EPA did not include the 52% of the Site soil that is covered with pavement and/or buildings as "affected soil" under the ROD. Accordingly, this is to clarify, consistent with the ROD, the extent of cleanup called for under the three remedy elements that involve soil sampling or soil excavation in the ROD:

- Sampling for lead in Surface Soil and sampling for hydrocarbons in Surface and Subsurface Soils at the request of on-site community members - Under this remedy element, Settling Defendant need not sample soil that is

Organic contaminants in soil

k. **Polynuclear Organic Hydrocarbons (PAHs)** - Seven compounds, related in both their chemical structure and the health effects they may cause in humans, are considered carcinogenic polynuclear aromatic hydrocarbons (PAHs). These compounds are listed below along with the Toxicity Equivalency Factors (TEFs) that should be used to convert each carcinogenic PAH compound's relative potency to the potency of benzo(a)pyrene:

Compound	TEF
Benzo(a)pyrene	1.0
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.1
Chrysene	0.001
Dibenzo(a,h)anthracene	1.0
Indeno(1,2,3-c,d)pyrene	0.1

For simplicity in laboratory reporting, the concentrations of these carcinogenic PAH's are generally reported as equivalent to a concentration of one of the more common PAHs, benzo(a)pyrene (BAP), using the TEFs. This comparative measurement is referred to as a BAP equivalent. If, during sampling or excavation performed as part of the Remedial Action, Settling Defendant discovers any of the seven PAHs in Surface or Subsurface

covered by pavement or buildings;

- Cleanup of lead-contaminated Surface Soil discovered during requested sampling or uncovered during earthmoving activities - Under this remedy element, Settling Defendant need not clean up (e.g., excavate) Surface Soil that is covered by pavement or buildings;
- Cleanup of hydrocarbon-contaminated Surface and Subsurface Soil discovered during requested sampling or uncovered during earthmoving activities - Under this remedy element, Settling Defendant need not clean up (e.g., excavate) Surface or Subsurface Soil that is covered by pavement or buildings.

Under these remedy elements, Settling Defendant need not excavate the Subsurface Soil near pavement or buildings if the excavation of Subsurface Soil near the pavement or building would destabilize that pavement or building unless extraordinary engineering measures were taken; however, Settling Defendant shall excavate Subsurface Soil near pavement or buildings using ordinary engineering measures, if ordinary engineering measures would prevent the pavement or buildings from becoming destabilized. Examples of extraordinary engineering measures include: 1) installation of permanent piers; 2) installation of permanent foundations; and 3) use of freeze walls. Any on-site determination that excavation would require extraordinary engineering measures is subject to review and approval by EPA or its designated agent.

Note, however, that it is not acceptable for Settling Defendant to pave or build on top of soil (where no pavement or building previously existed) in lieu of cleaning up that soil.

Soil, Settling Defendant shall excavate all Surface and Subsurface Soil containing concentrations of PAHs which are greater than one part BAP equivalent to one million parts soil (or 1 ppm). 1 ppm is the remediation goal for PAHs in Surface and Subsurface Soil.

l. **Benzene** - If, during sampling or excavation performed as part of the Remedial Action, Settling Defendant discovers any benzene in Surface or Subsurface Soil, Settling Defendant shall excavate all Surface and Subsurface Soil containing concentrations of benzene that exceed 1 ppm. 1 ppm is the remediation goal for benzene in Surface and Subsurface Soil.

m. **Additional Organic Compounds** - If, during sampling or excavation performed as part of the Remedial Action, Settling Defendant discovers any Site-related⁵ organic compounds (other than benzene or PAHs) in Surface or Subsurface Soil,⁶ Settling Defendant shall excavate all Surface and Subsurface Soil containing Site-related organic compounds which are:

- i. Carcinogenic and present at concentrations which pose an excess lifetime cancer risk equal to or greater than 1×10^{-6} [Settling Defendant shall calculate the excess lifetime cancer risk for each carcinogenic chemical discovered by using the following equation and exposure factors (note: superscript figures in the equation refer to footnotes and do not indicate exponents): $\text{Risk} = (\text{HIF}_{\text{inhalation carcinogen}}^7 \times \text{slope factor}^8 \times \text{chemical concentration}) \text{ plus } (\text{HIF}_{\text{ingestion carcinogen}} \times \text{slope factor} \times \text{chemical concentration})$

⁵"Site-related" means that the material in question was placed on or is derived from or comingled with substances placed on the Site during the period from 1923 to 1969. Under the Consent Decree, including this SOW, there is a presumption that all organic compounds that are found on the Site are Site-related. EPA may determine that an organic compound found on the Site is not Site-related if Settling Defendant presents EPA with evidence that it is more likely than not that the compound in question is not Site-related.

⁶Settling Defendant shall sample for the volatile and semi-volatile organic compounds described in the list it develops as described in SOW paragraph 17. Of course, this list is subject to EPA review and approval as provided in SOW paragraphs 14 and 15 as well as the other pertinent provisions of the Consent Decree, and may, subject to EPA review and approval, be subsequently modified based on new information relating to the presence of "site-related organic compounds."

⁷HIF_{inhalation carcinogen} means Human Intake Factor for inhalation of a carcinogen. The HIF_{inhalation carcinogen} will be provided to the Settling Defendant by the EPA. HIF_{ingestion carcinogen} means Human Intake Factor for ingestion of a carcinogen. The HIF_{ingestion carcinogen} will be provided to the Settling Defendant by the EPA.

⁸ The Settling Defendant shall take the slope factor for the chemical in question from Table 9 of the Baseline Risk Assessment for Human Health which is Volume III of EPA's Remedial Investigation. If Table 9 does not contain a slope factor for the carcinogenic chemical discovered, or if the slope factor used by EPA has changed, then EPA will provide the slope factor.

concentration)]; and/or

- ii. Non-carcinogenic and present at concentrations that present a Hazard Index (HI) equal to or greater than 1 [Settling Defendant shall calculate the HI for each noncarcinogenic chemical discovered by using the following equation and exposure factors (note: superscript figures in the equation refer to footnotes and do not indicate exponents): $HI = (HIF_{\text{inhalation non-carcinogen}}^9 \times \text{chemical concentration divided by RfD}^{10}) \text{ plus } (HIF_{\text{ingestion non-carcinogen}} \times \text{chemical concentration divided by RfD})$].

The calculation of the carcinogenic risk and the hazard index for a given sample does not include chemicals not detected in the given sample but may include Tentatively Identified Compounds ("TICs") at the discretion of the EPA. An excess lifetime cancer risk of 1×10^{-6} and an HI of 1 are the remediation goals for Site-related organic compounds in Surface and Subsurface Soil.

EPA will use the Performance Standards to determine if the Settling Defendant's Work including without limitation the Remedial Design and the Remedial Action has been completed.

IV. SETTLING DEFENDANT'S KEY PERSONNEL

Settling Defendant's Supervising Contractor

8. Within 10 days of EPA's authorization to proceed as provided in paragraph 10 of the Consent Decree, the Settling Defendant shall notify EPA, in writing, of the name, title, address, and telephone number of the key personnel with the Settling Defendant's staff and the Supervising Contractor's staff.

9. When necessary as determined by EPA, Settling Defendant shall meet with EPA at the times, dates and places selected by EPA, and discuss the performance and capabilities of the Settling Defendant's Supervising Contractor(s). When the Supervising Contractor's performance is not satisfactory, as determined by EPA, the Settling Defendant shall take action, as requested

⁹HIF_{inhalation non-carcinogen} means Human Intake Factor for inhalation of a non-carcinogen. The HIF_{inhalation non-carcinogen} will be provided to the Settling Defendant by the EPA. HIF_{ingestion non-carcinogen} means the Human Intake Factor for ingestion of a non-carcinogen. The HIF_{ingestion non-carcinogen} will be provided to the Settling Defendant by the EPA.

¹⁰The Settling Defendant shall take the RfD (RfD means reference dose) for the non-carcinogenic chemical in question from Table 8 of EPA's Baseline Risk Assessment for Human Health which is Volume III of EPA's Remedial Investigation. If Table 8 does not contain a RfD for the non-carcinogenic chemical discovered, or if the RfD used by EPA has changed, then EPA will provide the RfD.

by EPA, to correct the deficiency. If, at any time, EPA determines that a Supervising Contractor is unacceptable for any reason, the Settling Defendant, at EPA's request, shall bar the Supervising Contractor from any work under the Consent Decree, and, pursuant to the provisions of Paragraph 10 of the Consent Decree, Settling Defendant shall give notice of Settling Defendant's selected new Supervising Contractor to EPA, and pursuant to the provisions of paragraph 8 of this SOW Settling Defendant shall identify the new Supervising Contractor's key personnel.

The Quality Assurance Official

10. Within 10 days of EPA's authorization to proceed as described in paragraph 10 of the Consent Decree, the Settling Defendant shall notify EPA in writing of the name, title, address, and phone number, and qualifications of its quality assurance official ("QA Official") who will conduct a quality assurance program during the construction phase of the Remedial Action. Settling Defendant shall use the QA Official to provide confirmation and assurance to the Settling Defendant and to EPA that the Settling Defendant is constructing the selected remedy for the Site to meet Performance Standards. The QA Official shall implement the Remedial Design QAPP and the Construction Quality Assurance Plan ("CQAP") by selectively testing and inspecting the Work of the Supervising Contractor and the Remedial Action (RA) Contractor. The Settling Defendant shall certify to EPA, in writing, that the QA Official shall be independent and autonomous from the Supervising Contractor and the Remedial Action Contractor.

11. Once EPA receives Settling Defendant's Notice Regarding the QA Official as described in the preceding paragraph, EPA will issue a notice of disapproval or an authorization to proceed regarding the QA Official. If at any time thereafter, Settling Defendant proposes to change a QA Official, Settling Defendant shall give written notice, containing the name, title, address, telephone number, and qualifications of the proposed QA Official, to EPA, and Settling Defendant must obtain an authorization to proceed from EPA before the new QA Official performs, directs, or supervises any Work.

12. If, at any time, EPA disapproves Settling Defendant's proposed QA Official, EPA will notify Settling Defendant in writing. Within 30 days of receipt of EPA's disapproval of the person previously proposed as QA Official, Settling Defendant shall submit to EPA a written list of proposed QA Officials that would be acceptable to Settling Defendant. The Settling Defendant's submission shall include the name, title, address, telephone number, and qualifications of the proposed QA Officials. EPA will provide written notice of the names of any proposed QA Officials that it disapproves and an authorization to proceed with respect to any of the other proposed QA Officials. Settling Defendant may select any QA Official from that list that is not disapproved and shall notify EPA in writing of the name of the proposed QA Official selected as QA Official within 21 days of EPA's authorization to proceed.

13. When QA Official performance is not satisfactory, as determined by EPA, the Settling Defendant shall take action, as requested by EPA, to correct the deficiency. If, at any time, EPA

determines that the QA Official is unacceptable for any reason, the Settling Defendant, at EPA's request, shall bar the QA Official from performing, directing, or supervising any Work under the Consent Decree, and, the Settling Defendant shall notify EPA in writing of its proposed new QA Official. The Settling Defendant's notice shall be as described in Paragraph 10 of this SOW. Settling Defendant must obtain an authorization to proceed from EPA before the new QA Official performs, directs, or supervises any Work under the Consent Decree. If EPA disapproves of any proposed QA Official, Settling Defendant shall submit a written list of proposed QA Officials to EPA, and follow the procedure set forth in Paragraph 12 of this SOW.

V. Work to Be Performed

Remedial Design Work Plan

14. Within 45 days of EPA's authorization to proceed as provided in paragraph 10 of the Consent Decree, Settling Defendant shall develop a written Remedial Design Work Plan and submit it to EPA¹¹ for EPA review and approval pursuant to Section XI (EPA Approval of Plans and Submissions) of the Consent Decree. In the Remedial Design Work Plan, Settling Defendant shall include detailed written plans for the development of a Remedial Design which shall include a detailed set of plans and specifications for the implementation of the ROD-selected remedy including without limitation all of the Remedy Elements. In the Remedial Design Work Plan, Settling Defendant shall also include its detailed written plans for the completion of the deliverables described in SOW paragraphs 15 through 35. Settling Defendant shall include, in the Remedial Design Work Plan, a schedule for the completion of the Remedial Design including without limitation the deliverables described in SOW paragraphs 15 through 35.

Remedial Design

15. Settling Defendant shall complete the written Remedial Design, which includes a detailed set of plans and specifications for the implementation of the ROD-selected Remedial Action including without limitation all the remedy elements identified in the preceding paragraph, according to the EPA-approved Remedial Design Work Plan including without limitation the EPA-approved schedule in the Remedial Design Work Plan. Settling Defendant shall complete the Remedial Design in two stages: i) Settling Defendant shall produce a written Draft Remedial Design which Settling Defendant shall submit to EPA for EPA's review and approval pursuant to Section XI (EPA Approval of Plans and Submissions) of the Consent Decree; and ii) once EPA has approved the Draft Remedial Design, Settling Defendant shall submit a written Pre-Final Remedial Design to EPA for EPA's review and approval pursuant to Section XI (EPA Approval of Plans and Submissions) of the Consent Decree. Once EPA approves the Pre-Final Remedial

¹¹ As required by Section X of the Consent Decree, Settling Defendant shall simultaneously submit copies of all submissions to LDEQ for its review. The EPA will ensure that LDEQ has had an opportunity to comment on all submissions before they are approved by EPA.

Design, it becomes the Final Remedial Design. In the Draft Remedial Design, Settling Defendant shall include the deliverables described in SOW paragraphs 16 through 27 (Draft Remedial Design Deliverables). In the Pre-Final Remedial Design, Settling Defendant shall include the deliverables described in SOW paragraphs 16 through 35 (Draft Remedial Design Deliverables, and Pre-Final Remedial Design Deliverables). Once Settling Defendant has submitted the Pre-Final Remedial Design (after EPA approves the Draft Remedial Design), unless otherwise directed by EPA in writing, Settling Defendant shall not perform further Work at the Site prior to EPA's written approval of the Pre-Final Remedial Design Work Plan pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions).

Draft Remedial Design Deliverables

16. Settling Defendant shall develop a written Health and Safety Plan for field design activities, to be prepared in conformance with applicable Occupational Safety and Health Administration ("OSHA") and EPA requirements, including OSHA regulations 29 CFR §1910 (54 Fed. Reg. 9294). In addition, in the Health and Safety Plan, Settling Defendant shall also document specific health and safety procedures, criteria, or protocols, including the following: material safety data sheets for selected contaminants; safety instructions for special equipment; explanations of the use and maintenance of special equipment; records documenting the status of training and medical examinations for field personnel and health and safety officers; and copies of reports and other health and safety documentation.

17. Settling Defendant shall develop a written Remedial Design Sampling and Analysis Plan which includes, but is not limited, to the following information: Field, sampling, and analytical activities to assess the concentrations of contaminants, the physical and chemical characteristics, and any additional waste profile information required by a treatment and disposal facility prior to its acceptance of Site material if Site material is to be sent off-site; and field sampling and analytical activities to assess how to design and optimize the dual phase extraction system and the ground water monitoring network. Settling Defendant shall include in the Remedial Design Sampling and Analysis Plan a list of the volatile and semi-volatile organic compounds that it will sample for as part of the following remedy elements:

- Sampling for Lead in Surface Soil and Sampling for Hydrocarbons in Surface and Subsurface Soils at the Request of On-site Community Members; and
- Cleanup of Lead or Hydrocarbon-Contaminated Surface and Subsurface Soil Discovered during Requested Sampling or Uncovered during Earthmoving Activities.

18. Settling Defendant shall develop a written Quality Assurance Project Plan ("QAPP"). The QAPP shall be developed in accordance with Section VIII of the Consent Decree (Quality Assurance, Sampling, and Data Analysis).

19. Settling Defendant shall prepare a written Community Relations Plan. In the Community Relations Plan the Settling Defendant shall describe actions which Settling Defendant shall take to support EPA's Community Relations efforts.

20. Settling Defendant shall develop a written Remedial Design Contingency Plan to protect the local affected population in the event of an accident or emergency at the Site. Settling Defendant shall include a Spill Prevention, Control and Countermeasures Plan in the Remedial Design Contingency Plan.

21. Settling Defendant shall develop a written Permitting Requirements and Compliance Plan. The Settling Defendant's plan shall ensure that all onsite activities meet the substantive (but not the administrative) requirements of all State and Federal environmental permitting laws for on-site activities. The Settling Defendant's plan shall ensure that all relevant State and Federal environmental permits are obtained for off-site activities. The Permitting Requirements and Compliance Plan shall, pursuant to CERCLA Section 121(d), 42 U.S.C. § 9621(d), set forth the requirements for all Applicable or Relevant and Appropriate Requirements (ARARs) pertaining to the RD/RA. The Settling Defendant shall also, in the Permitting Requirements and Compliance Plan, describe the permits required for RD/RA, if any, and they shall also describe the activities required to demonstrate compliance with those permits. If, after EPA approves the Permitting Requirements and Compliance Plan pursuant to Section XI (EPA Approval of Plans and Submissions) of the CD, EPA later determines at any time that the Permitting Requirements and Compliance Plan is incomplete for any reason, the Settling Defendant shall amend the plan as directed by EPA.

22. Settling Defendant shall prepare all drawings and written specifications for the Final Remedial Design.

23. Settling Defendant shall prepare a written Remedial Action Sampling and Analysis Plan designed to measure progress toward meeting remedial action objectives and remediation goals described in Section 9 (Remedial Action Objectives and Goals) of the ROD.¹² EPA will use the EPA-approved Remedial Action Sampling and Analysis Plan as the basis for ascertaining whether or not the Performance Standards have been achieved by the Remedial Action. Settling Defendant shall include in the Remedial Action Sampling and Analysis Plan the following:

a. A description of the confirmatory, field, sampling and analytical activities that Settling Defendant shall perform to evaluate changes in LNAPL volume over time, to characterize and monitor the LNAPL plumes and their migration, and to estimate the effectiveness of the LNAPL extraction in order to ensure that LNAPL is being removed in a manner that will meet the performance standard established in the ROD;

¹²See 40 CFR § 300.435(f).

b. A description of the confirmatory, field, sampling and analytical activities that Settling Defendant shall perform to track the location of the dissolved-phase contaminants of concern in the ground water plumes (including without limitation the direction and rate of contaminant plume migration) as detailed in Section 9 (Remedial Action Objectives and Goals) of the ROD and Section 12 (The Selected Remedy) of the ROD;

c. A description of the confirmatory, field, sampling, and analytical activities that shall be used by Settling Defendant to determine the concentration of Surface and Subsurface Soil contaminants (including lead, benzene, PAHs, other organic carcinogenic compounds that are Site-related, and other toxic organic compounds that are Site-related) on the Site.

d. A description of the confirmatory, field, sampling, and analytical activities that shall be used by Settling Defendant to determine the concentration of benzene in indoor air on the Site.

e. A description of the statistical methodologies that Settling Defendant shall use to demonstrate that Remediation Goals have been attained for the entire remedy, including all of the Remedy Elements, in accordance with the procedures outlined in Paragraphs 53 through 60 of this SOW;

f. The procedures that Settling Defendant shall use to resample if EPA or Settling Defendant finds that analytical results are suspect; and

g. A schedule for sampling during the Remedial Action activities.

24. Settling Defendant shall prepare a written Health and Safety Plan for Remedial Action activities, to be prepared in conformance with applicable Occupational Safety and Health Administration ("OSHA") requirements, including without limitation OSHA regulations 29 CFR § 1910 (54 Fed. Reg. 9294), and all EPA health and safety requirements.

25. Settling Defendant shall prepare a written Operation and Maintenance (O & M) Plan describing in detail measures to be taken in order to maintain the effectiveness of the constructed Remedial Action including all of the Remedy Elements.

26. Settling Defendant shall prepare a written Construction Quality Assurance Plan which describes the Site-specific components of the quality assurance program which shall ensure, with a reasonable degree of certainty, that the completed remedy meets or exceeds all Performance Standards, including design criteria, plans, and specifications. Settling Defendant shall include the following in the CQAP:

a. A description of the qualifications of the QA Official in order to demonstrate that the QA Official possesses the training and experience necessary to fulfill the QA Official's

responsibilities as identified in paragraph 10 of this SOW. A listing of responsibilities and authorities of all of Settling Defendant's key personnel involved in the design of all the Remedy Elements, and a listing of responsibilities and authorities of all of Settling Defendant's key personnel involved in the construction of these elements.

b. An identification and qualifications of all quality assurance personnel, to demonstrate they possess the training and experience necessary to fulfill their identified responsibilities.

c. A description of the observations and tests which Settling Defendant shall use to monitor construction, and a schedule for the observations and tests.

d. A description of proposed sampling activities which Settling Defendant shall undertake including sample size, sample locations, frequency of testing, acceptance and rejection criteria, plans for implementing corrective measures as addressed in the plans and specifications, ~~data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.~~

e. A description of the reporting requirements for quality assurance activities including such items as periodic summary reports (with the period determined by EPA), schedule of data submissions, inspection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.

f. A description of the formatting for all data acquired during the Remedial Action, including the methods of electronic data preservation of all reports and raw data, and the methods for graphical presentation of data using Global Information System (GIS).

g. A description of the arrangements which Settling Defendant shall make for final storage of all records and documents, consistent with requirements of Section XXV.(Retention of Records) of the Consent Decree.

27. Settling Defendant shall prepare a written Remedial Action Release Prevention/Contingency Plan which shall be consistent with paragraphs 48 and 49 of the Consent Decree, and that explains in detail the actions that Settling Defendant shall take in the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material at or from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment. Settling Defendant shall design the plan to protect the local population in the event of an accident or emergency at the Site. In the Remedial Action Release Prevention/Contingency Plan, Settling Defendant shall include:

a. An Air Monitoring Plan to ensure that there are no dangerous releases of Waste Material into ambient air on or near the Site;

b. A Spill Prevention, Control and Countermeasures ("SPCC") Plan, as specified in 40 CFR Part 112;

c. The name and telephone number of the person or entity which the Settling Defendant designates as responsible for responding in the event of an emergency incident.

d. A plan for a local emergency response coordination meeting on a date specified in the plan. Settling Defendant shall use its best efforts to ensure that the meeting is attended by representatives of local emergency responders, including without limitation fire department, police, and hospital representatives, along with LDEQ and EPA officials.

e. First aid and medical information.

Pre-Final Remedial Design Deliverables

28. ~~Settling Defendant shall include the Draft Remedial Design as part of the Pre-Final Remedial Design, once the Draft Remedial Design has been approved by EPA.~~

29. Settling Defendant shall prepare detailed final written plans and specifications for the construction and implementation of the ROD-selected remedy including without limitation all of the Remedy Elements. Pursuant to 40 CFR § 300.440, EPA will make a written determination as to the acceptability of any facility chosen by the Settling Defendant to receive CERCLA off-site wastes.

30. Settling Defendant shall prepare a written Final Remedial Design Report explaining in detail how the Settling Defendant's Pre-Final Remedial Design (including without limitation the EPA-approved Draft Remedial Design) complies with Performance Standards including without limitation the remediation goals described in Section 9 (Remedial Action Objectives and Goals) of the ROD, and addressing all issues and comments which EPA raised to Settling Defendant during the design process. The Settling Defendant shall clearly indicate any modification of the design made as a result of Settling Defendant's incorporation of comments furnished to Settling Defendant by EPA during Draft Remedial Design submission review.

31. If Settling Defendant intends to request proposals or bids from prospective Remedial Action contractors, Settling Defendant shall prepare a written request for contractor proposals or a written invitation for contractor bids for the Remedial Action.

32. Settling Defendant shall add the following to the written CQAP that Settling Defendant prepared as part of the Draft Remedial Design:

a. A description of the testing and sampling protocols which Settling Defendant shall use to monitor construction.

b. A Final Data Management Plan that includes a description of the formatting for all data acquired during the RA, including the methods of electronic data preservation of all reports and raw data, and the methods for graphical presentation of data (GIS).

33. Settling Defendant shall prepare a written Final Construction Schedule for construction of the Remedial Action.

34. Settling Defendant shall prepare a written plan for providing access to the Site for EPA's Remedial Project Manager (RPM), State Officials including without limitation LDEQ officials, EPA Oversight Officials, State Contractors, and other agencies with jurisdictional interest pursuant to Section IX (Access) of the Consent Decree.

35. Settling Defendant shall prepare a written Community Relations Plan. In the Community Relations Plan the Settling Defendant shall describe actions which Settling Defendant shall take to support EPA's Community Relations efforts and to provide active communication between the community and the Settling Defendant.

Remedial Action Work Plan

36. Within 30 days of EPA's approval of the Pre-Final Remedial Design, thereby making it the Final Remedial Design, Settling Defendant shall develop a written Remedial Action Work Plan and submit the Remedial Action Work Plan to EPA for EPA's review and approval pursuant to Section XI (EPA Approval of Plans and Submissions) of the Consent Decree. In the Remedial Action Work Plan, Settling Defendant shall describe its detailed plans, including without limitation a schedule, for the completion of the deliverables described in the EPA-approved Final Remedial Design and in SOW paragraphs 37 through 51 (Remedial Action and O&M Deliverables). That is, the Settling Defendant shall develop a Remedial Action Work Plan which describes the manner in which Settling Defendant shall effectuate the design described in the Final Remedial Design in order to complete the ROD-selected remedy including the Remedy Elements. Settling Defendant, in the Remedial Action Work Plan, shall describe the manner in which it will perform the Remedial Action to meet the Remediation Goals of the ROD as described in Section 9 (Remedial Action Objectives and Goals) of the ROD and to operate and maintain the completed remedy. Settling Defendant, in the Remedial Action Work Plan, shall describe the manner in which Settling Defendant shall complete the deliverables described in SOW paragraphs 37 through 51 (Remedial Action and O&M Deliverables).

Remedial Action and O&M Deliverables

37. Settling Defendant shall establish written procedures and standards for Selection of the Remedial Action Contractor consistent with the ROD, the Consent Decree, and this SOW.

38. Settling Defendant shall prepare written plans for the completion of the Remedial Action

according to the Final Remedial Design (i.e., the EPA-approved Pre-Final Remedial Design) including the execution of the contract for construction.

39. Settling Defendant shall prepare written Remedial Action Schedule which shall set deadlines for Settling Defendant's completion of the Remedial Action construction activities including without limitation the construction activities necessary to support the ROD-selected remedy including the Remedy Elements. Settling Defendant shall also, in the Remedial Action Schedule, set deadlines for Settling Defendant's completion of Operational and Functional activities pursuant to 40 CFR § 300.435(f).

40. Settling Defendant shall prepare written plans for identification of and satisfactory compliance with substantive permitting requirements (but not administrative permitting requirements) for on-site Remedial Action activities, and for permitting requirements (substantive and administrative) for any off-site activities that may require a permit.

41. ~~Settling Defendant shall identify in writing its key Remedial action personnel including~~ without limitation any contractor personnel. The identification shall include names, addresses, titles, telephone numbers and descriptions of duties, and lines of authority.

42. Settling Defendant shall complete a clear and concise written description of the roles, relationships, and assignment of responsibilities among the Settling Defendant's Project Coordinator, QA Official, Supervising Contractor, Remedial Design Team, and the Remedial Action Contractor.

43. Settling Defendant shall complete a written Transportation and Disposal Plan which establishes procedures for any contaminated material that is to be transported off-site for disposal. The Transportation and Disposal Plan shall be consistent with the Off-site Rule, 40 CFR § 300.440, shall meet all Applicable or Relevant and Appropriate Requirements (ARARs), and shall meet any applicable U.S. Department of Transportation regulations.

44. Settling Defendant shall develop written strategies and a schedule for implementing the following plans which are part of the Remedial Design:

- a. Remedial Action Sampling and Analysis Plan
- b. Health and Safety Plan
- c. O&M Plan
- d. CQAP
- e. Remedial Action Release Prevention/Contingency Plan.

45. Settling Defendant shall establish written procedures that describe the manner in which Settling Defendant shall develop and submit to EPA monthly Remedial Action Status Updates for the for the entire remedy including all of the Remedy Elements.

46. Settling Defendant shall establish written procedures that describe the manner in which Settling Defendant shall develop and submit to EPA Annual Remedial Action Reports for the LNAPL recovery and ground water monitoring remedy component. Settling Defendant shall write and submit Annual Remedial Action Reports to EPA for EPA review and approval pursuant to Section XI (EPA Approval of Plans and Other Submissions) of the Consent Decree. In the annual Remedial Action Reports, Settling Defendant shall summarize the Remedial Action activities completed during the preceding year, and shall also provide an analysis of the ground water and LNAPL data acquired during the preceding year. Settling Defendant shall submit the first Annual Remedial Action Report to EPA one year from EPA's approval of the RA Work Plan, and Settling Defendant shall submit subsequent Annual Remedial Action Reports to EPA on the anniversary of the first report.

47. Settling Defendant shall establish written procedures for a Pre-Final Inspection that the Settling Defendant shall carry out when the Work described in the Consent Decree, in the SOW, and in EPA-approved submissions has been completed. The purpose of this inspection is to assess if all aspects of the plans and specifications have been implemented at the Site for the Remedial Action construction. As a result of this inspection, Settling Defendant shall generate a check list which details the outstanding items still requiring completion or correction, if any, and Settling Defendant shall submit this checklist to EPA for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions). EPA will not approve the Work until all checklist items are complete.

48. Settling Defendant shall develop written procedures that Settling Defendant shall use to develop a Remedial Action Report for the entire remedy including all of the Remedy Elements. Settling Defendant shall make the procedures consistent with the requirements of Paragraph 62 of this SOW.

49. Settling Defendant shall develop written procedures that Settling Defendant shall use to develop a Certification of Completion of the Work for the entire remedy including all of the Remedy Elements pursuant to Section XIV (Certification of Completion) of the Consent Decree, and Section V of this SOW.

50. Preconstruction Conference Within 30 days of EPA's approval of the Remedial Action Work Plan, and prior to the start of construction of the Remedial Action selected in the ROD (see Section 12 (The Selected Remedy) of the ROD), the Settling Defendant shall schedule and conduct a pre-construction conference. Settling Defendant shall use its best efforts to ensure that participants in the conference shall include representatives of the Settling Defendant, the Settling Defendant's Project Coordinator, the EPA Remedial Project Manager and any designated EPA

Oversight Officials, the LDEQ Project Manager and any designated LDEQ Oversight Officials, a representative of the Supervising Contractor(s), the QA Official, a representative of the RA Contractor, a representative of the Remedial Design Team, and representatives of all selected subcontractors. The purpose of the pre-construction conference shall be to establish working relationships among all those involved in the Remedial Action, to establish lines of communication, and to discuss Remedial Action activities.

51. Construction Oversight Pursuant to Section IX of the CD (Access) and Section XXIV of the CD (Access to Information), during implementation of the Remedial Action, and the Work, the Settling Defendant shall provide the RPM, EPA-designated Oversight Officials, State Officials, and State-designated oversight officials with access to the Site and to all land facilities utilized by Settling Defendant, and by Settling Defendant's contractors or agents, in carrying out the Work. The Settling Defendant shall provide an office for the RPM, the LDEQ project manager, and EPA-designated Oversight Officials at or near the Site. The office shall include, at a minimum, an air-conditioned, heated, well-lit, private office, two office desks with chairs, one ~~four-drawer file cabinet, access to a telephone with a private line, access to a tele-facsimile, access~~ to a photocopying machine, and restroom facilities. For field work undertaken away from the office, Settling Defendant shall provide the RPM, the LDEQ project manager, and EPA-designated oversight officials with on-site restroom facilities and communications equipment, including a telephone and walkie-talkies if necessary. Settling Defendant shall also provide personal protective equipment for the RPM, State Officials, and EPA-designated Oversight Officials, who have received the necessary training under 29 CFR § 1910.120, so that they might have access to all portions of the Site including contaminated portions.

Completion Work to be Performed by Settling Defendant

52. Construction of the remedy is complete once EPA determines that the remedial action or portion of the remedial action, including without limitation the Work described in SOW Section V (Work to be Performed), has achieved the remedial action objectives and remediation goals described in Section 9 (Remedial Action Objectives and Goals) of the ROD.¹³ The remedy or portion of the remedy becomes Operational and Functional either one year after EPA determines that the construction of the remedy is complete,¹⁴ or when the remedy is determined concurrently by EPA and LDEQ to be functioning properly and is performing as designed, whichever is earlier. Once the remedy or portion of the remedy is Operational and Functional, Settling Defendant shall perform Operation and Maintenance (O&M) of the remedy consistent with the EPA-approved O&M plan (which is part of the Remedial Action Work Plan).

¹³See 40 CFR § 300.435(f).

¹⁴The construction of the remedy is complete once the remedial action objectives and remediation goals are deemed to have been met as described in SOW paragraphs 53

Settling Defendant shall demonstrate that Remedial Action Objectives and Remediation Goals are met

53. Once Settling Defendant has completed the pre-certification inspection described in subparagraph 46(a) of the Consent Decree, and Settling Defendant concludes that the Remedial Action Objectives and Remediation Goals are met, Settling Defendant shall gather information supporting that conclusion so that it may be submitted to EPA for review and approval (pursuant to Consent Decree Section XI (EPA Approval of Plans and Other Submissions)) as part of the report described in subparagraph 46(a) of the Consent Decree. In order to demonstrate that the Remedial Action Objectives and Remediation Goals are met, Settling Defendant must include in its report the information required by SOW paragraphs 54 through 60, and Settling Defendant must obtain the EPA approvals described in paragraphs 54 through 60.

Soil Media Remedial Action Objectives

54. ~~The following are the Remedial Action Objectives for soil that were selected in the ROD~~ (the Remediation Goals for soil are part of the Remedial Action Objectives):

- a. Prevent human (especially child) ingestion of lead-contaminated Surface and Subsurface Soil with lead concentrations that exceed 510 ppm.
- b. Prevent human ingestion of, and prevent human dermal contact with, and prevent human inhalation of Surface and Subsurface Soils containing carcinogenic PAHs at concentrations greater than 1 ppm benzo(a)pyrene (BAP) equivalents, or benzene at concentrations greater than 1 ppm.
- c. Prevent human ingestion of, and prevent human dermal contact with, soils containing other site-related compounds that present a carcinogenic risk greater than 1×10^{-6} or a HI greater than 1.
- d. Reduce and/or eliminate the potential for soils to be impacted by COCs present in refinery waste materials located in the subsurface by removing LNAPL from ground water until the performance standard (a threshold thickness of 0.1 foot of LNAPL, measured using an interface probe in monitoring or extraction wells) is attained.

55. In order to demonstrate that the remedial action objectives described in subparagraphs a. through c. of SOW paragraph 54 have been met, Settling Defendant shall do the following:

- a. Settling Defendant shall calculate statistically the number of square feet of exposed Site area which must be sampled and found to have no soil lead concentrations in excess of 510

ppm, in order to determine with 95% confidence that the entire exposed¹⁵ Site area (including unsampled areas) is free of soil lead concentrations that exceed 510 ppm in the Surface Soil (hereinafter this calculated number of square feet is referred to as the lead-safe threshold area).¹⁶ In performing this statistical calculation, Settling Defendant shall use (and document its use of) geostatistical methods and the statistical methods described in Chapter 6 of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication 230/02-89-042 (February 1989), unless EPA approves another method proposed in writing by Settling Defendant. (EPA shall provide the false positive rate in any case.) Once Settling Defendant calculates the lead-safe threshold area, Settling Defendant shall submit a written report describing its calculations and stating its proposed lead-safe threshold area to EPA for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions). Once Settling Defendant finds that an exposed area of the Site equal in size to the EPA-approved lead-safe threshold area has been sampled (by Settling Defendant as requested by the on-Site community), and Settling Defendant finds that samples show that the lead-safe threshold area does not have concentrations of soil lead exceeding 510 ppm, then Settling Defendant shall submit another written report showing its findings to EPA for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions). In making its written finding, Settling Defendant shall use (and document its use of) the statistical methods described in Chapter 6, Section 6.3.4 and equation 6.8, of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication 230/02-89-042 (February 1989), to ensure that the areas sampled have met the remediation goal of 510 ppm lead. (EPA will provide all the input parameters for this calculation which are not specifically calculated using Site data.) Once EPA approves the Settling Defendant's finding (i.e.,

¹⁵For the purposes of SOW paragraph 55(a), (b), and (c), "exposed" means the Site area that is not paved or built upon. Under the procedures described in paragraph 55(a), (b), and (c), the areal extent of sampling is limited to "exposed" areas, but Settling Defendant shall take samples at depth whether or not the soil in question can be seen on the surface (unless it is under pavement or a building). That is, in determining the lead-safe threshold area as called for in SOW paragraph 55(a), Settling Defendant must sample Surface Soil (that is not paved or built upon) to two feet bgs, and, in order to satisfy the requirements of paragraph 55 (b) and (c), Settling Defendant must sample Surface Soil and Subsurface Soil (that is not under pavement or buildings) to the full depth of the contamination.

¹⁶Under the provisions of paragraph 46 (Completion of the Remedial Action) of the Consent Decree, Settling Defendant may request that EPA certify completion of the remedial action for a part of the Site. Of course, Settling Defendant must eventually complete remediation of the entire Site, but it may, according to the provisions of Consent Decree paragraph 46 and this SOW, seek certification of completion for parts of the Site. In the situation in which the Settling Defendant is seeking certification of completion for a part of the Site, the statistical analyses described in paragraph 55(a), (b), and (c) of the SOW apply not to the entire exposed Site area, but to the exposed area of the part of the Site in question. Once the remedial action for a part of the Site is certified as complete, the subsequent remaining sequential SOW provisions for the entire Site apply with respect to that part of the Site. That is, once the remedial action for a part of the Site is certified as complete by EPA, the Settling Defendant may request, pursuant to SOW paragraph 61, a determination that the remedy is operational and functional for that part of the Site, and once the remedy is determined to be operational and functional for that part of the Site, the Settling Defendant shall perform O&M for that part of the Site, and so on. However, the certification of completion provisions of SOW paragraphs 62 and 63 and of paragraph 47 (Completion of the Work) of the Consent Decree apply to the entire Site only. Settling Defendant cannot obtain a certificate of completion of the work for only a part of the Site.

once EPA approves Settling Defendant's finding that the lead-safe threshold area is free of concentrations of lead that exceed 510 ppm to two feet bgs) in the Settling Defendant's written report, the Remedial Action will be deemed to have met the remedial action objective and the remediation goal for soil lead.

b. Settling Defendant shall calculate statistically the number of square feet of exposed Site area (*i.e.*, area which is not paved or built upon) which must be sampled and found to have no BAP equivalents or benzene at concentrations in excess of 1 ppm, in order to determine with 95% confidence that the entire exposed Site area (including unsampled areas) is free of BAP equivalents or benzene at concentrations that exceed 1 ppm in the Surface and Subsurface Soil (hereinafter this calculated number of square feet is referred to as the BAP/benzene-safe threshold area). In performing this statistical calculation, Settling Defendant shall use (and document its use of) geostatistical methods and the statistical methods described in Chapter 6 of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication 230/02-89-042 (February 1989), unless EPA approves another method proposed in writing by Settling Defendant. ~~(EPA shall provide the false positive rate in any case.)~~ Once Settling Defendant calculates the BAP/benzene-safe threshold area, Settling Defendant shall submit a written report describing its calculations and stating its proposed BAP/benzene-safe threshold area to EPA for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions). Once Settling Defendant finds that an exposed area of the Site equal in size to the EPA-approved BAP/benzene-safe threshold area has been sampled (by Settling Defendant as requested by the on-Site community), and Settling Defendant finds that samples show that the BAP/benzene-safe threshold area does not have concentrations of BAP equivalents or benzene exceeding 1 ppm in the Surface or Subsurface Soil, then Settling Defendant shall submit a written report showing its findings to EPA for EPA review and approval. In making its written finding, Settling Defendant shall use (and document its use of) the statistical methods described in Chapter 6, Section 6.3.4 and equation 6.8, of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication 230/02-89-042 (February 1989), to ensure that the areas sampled have met the remediation goal of 1 ppm benzene and 1 ppm BAP equivalents. (EPA will provide all the input parameters for this calculation which are not specifically calculated using Site data.) Once EPA approves the Settling Defendant's finding in the Settling Defendant's written report (*i.e.*, once EPA approves Settling Defendant's finding that the BAP/Benzene-safe threshold area is free of concentrations of BAP and benzene that exceed 1 ppm in the Surface and Subsurface Soil), the Remedial Action will be deemed to have met the remedial action objective and the remediation goal for BAP equivalents and for benzene.

c. Settling Defendant shall calculate statistically the number of square feet of exposed Site area (*i.e.*, area which is not paved or built upon) which must be sampled and found to have no Site-related compounds that present a carcinogenic risk greater than 1×10^{-6} or a HI greater than 1, in order to determine with 95%* confidence that the entire exposed Site area (including unsampled areas) is free of concentrations of Site-related compounds that present a carcinogenic risk greater than 1×10^{-6} or a HI greater than 1 in the Surface or Subsurface Soil (hereinafter this

calculated number of square feet is referred to as the compound-safe threshold area). In performing this statistical calculation, Settling Defendant shall use (and document its use of) geostatistical methods and the statistical methods described in Chapter 6 of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication 230/02-89-042 (February 1989), unless EPA approves another method proposed in writing by Settling Defendant. (EPA shall provide the false positive rate in any case.) Once Settling Defendant calculates the compound-safe threshold area, Settling Defendant shall submit a written report describing its calculations and stating its proposed compound-safe threshold area to EPA for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions). Once Settling Defendant determines that an exposed area of the Site equal in size to the EPA-approved compound-safe threshold area has been sampled (by Settling Defendant as requested by the on-Site community), and Settling Defendant finds that samples show that the compound-safe threshold area does not have concentrations of site-related compounds that present a carcinogenic risk greater than 1×10^{-6} or a HI greater than 1, then Settling Defendant shall submit a written report showing its findings to EPA for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions). In making its written finding, Settling Defendant shall use (and document its use of) the statistical methods described in Chapter 6, Section 6.3.4 and equation 6.8, of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication 230/02-89-042 (February 1989), to ensure that the areas sampled have met the remediation goal of 1 ppm benzene and 1ppm BAP equivalents. (EPA will provide all the input parameters for this calculation which are not specifically calculated using Site data.) Once EPA approves the Settling Defendant's finding in the Settling Defendant's written report (*i.e.*, once EPA approves Settling Defendant's finding that the compound-safe threshold area is free of concentrations of Site-related compounds in soil that pose a carcinogenic risk greater than 1×10^{-6} or a HI greater than 1 in the Surface and Subsurface Soil), the Remedial Action will be deemed to have met the remedial action objective and the remediation goal for Site-related compounds that present a carcinogenic risk greater than 1×10^{-6} or a HI greater than 1.

56. In order to demonstrate that the remedial action objective described in subparagraph d. of SOW paragraph 54 has been met, Settling Defendant shall conduct sampling and analysis of LNAPL in the Site subsurface according to the EPA-approved Remedial Action Sampling and Analysis Plan until Settling Defendant finds that a threshold thickness of 0.1 foot of LNAPL, measured using an interface probe in monitoring or extraction wells is attained. Settling Defendant shall document its finding, including its analysis of the sampling data, in a written report which Settling Defendant shall submit to EPA for review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions). Once EPA approves Settling Defendants report, the Remedial Action will be deemed to have met the remedial action objective and the remediation goal for LNAPL recovery for soil media and for LNAPL recovery as it relates to indoor air.

Indoor Air Remedial Action Objectives

57. The following are the remedial action objectives for indoor air that were selected in the ROD (the remediation goals for indoor air are part of the remedial action objectives):

- a. Prevent human inhalation of concentrations of benzene in indoor air that exceed 10 ppbv benzene.
- b. Reduce and/or eliminate the potential for indoor air to be impacted by COCs present in refinery waste materials located in the subsurface by removing LNAPL from ground water until the performance standard (a threshold thickness of 0.1 foot of LNAPL, measured using an interface probe in monitoring or extraction wells) is attained.

58. In order to demonstrate that the remedial action objectives described in subparagraphs a. and b. of SOW paragraph 57 have been met, Settling Defendant shall do the following:

a. ~~Settling Defendant shall calculate statistically the number of Site dwelling units~~ (e.g., homes, apartments, or hotel rooms) which must be sampled semi-annually for five years and found to have no concentrations of benzene that exceed 10 ppbv, in order to determine with 95% confidence that all Site dwelling units (including unsampled units) are free of concentrations of benzene in indoor air that exceed 10 ppbv (hereinafter this calculated number of dwelling units is referred to as the benzene-safe threshold number). The statistical method that Settling Defendant shall use in making its calculation shall be similar to the statistical method described in Chapter 6 of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication 230/02-89-042 (February 1989). Before making this calculation, Settling Defendant shall submit a written report to EPA for review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions), and in that report Settling Defendant shall describe the statistical method that it intends to use to make the calculation. Once EPA has approved the Settling Defendant's report, Settling Defendant shall use the methods described in the EPA-approved report to calculate the benzene-safe threshold number of units. Once Settling Defendant determines that the benzene-safe threshold number of units has been sampled¹⁷ (by Settling Defendant as requested by the on-Site community) according to the EPA-approved Remedial Action Sampling and Analysis Plan, and once Settling Defendant has sampled all Site dwelling units that have had mitigation (e.g., foundation crack sealing, plumbing portal sealing, HVAC modification) semiannually for five years according to the EPA-approved Remedial Action Sampling and Analysis Plan, and once Settling Defendant finds no dwelling units that have indoor air concentrations of benzene that exceed 10 ppbv in any of these dwelling units, then Settling Defendant shall submit another written report showing its findings to EPA for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other

¹⁷The benzene-safe threshold number of units may include units that are sampled because they had indoor air concentrations of benzene that warranted mitigation. This SOW calls for residences that warrant indoor air mitigation because they have had concentrations of benzene that exceed 10 ppbv to be sampled for five years according to the Remedial Action Sampling and Analysis Plan.

Submissions). In making its written finding, Settling Defendant shall use (and document its use of) statistical methods similar to those found in Chapter 6 of "Methods for Evaluating the Attainment of Cleanup Standards: Volume 1: Soils and Soil Media," EPA publication EPA publication 230/02-89-042 (February 1989). Once EPA approves the Settling Defendant's finding in the Settling Defendant's written report (*i.e.*, once EPA approves Settling Defendant's finding that the benzene-safe number of dwelling units is free of concentrations of benzene in indoor air that exceed 10 ppbv), the Remedial Action will be deemed to have met the remedial action objective and the remediation goal for benzene in indoor air.

b. In order to demonstrate that the remedial action objective described in subparagraph b. of SOW paragraph 57 has been met, Settling Defendant shall conduct sampling and analysis of LNAPL in the Site subsurface according to the EPA-approved Remedial Action Sampling and Analysis Plan and submit a report as described in SOW paragraph 56.

c. Once EPA approves the Settling Defendant's findings in the Settling Defendant's written report required by subparagraphs a. and b. of this SOW paragraph (*i.e.*, once EPA approves Settling Defendant's finding that the benzene-safe number of dwelling units is free of concentrations of benzene in indoor air that exceed 10 ppbv, and once EPA approves Settling Defendant's finding that there is no more than .1 foot of LNAPL in the subsurface as required by SOW paragraph 56), the Remedial Action will be deemed to have met the remedial action objective and the remediation goal for benzene in indoor air; that is, once EPA approves Settling Defendant's findings then the Remedial Action will be deemed to have met the remedial action objectives and the remediation goals (the remediation goals are part of the objectives) described in SOW paragraph 57.

Ground Water Remedial Action Objectives

59. The following are the remedial action objectives for ground water that were selected in the ROD (the remediation goals for ground water are part of the remedial action objectives):

a. Prevent human ingestion or inhalation of ground water containing site-related COCs at concentrations which exceed the corresponding Maximum Contaminant Level Goals (MCLGs) established under the Clean Water Act (CWA) that are set above zero for these COCs. Alternatively, prevent human ingestion or inhalation of ground water containing CWA Maximum Contaminant Levels (MCLs) of these COCs when the corresponding MCLGs are set at zero.

b. Reduce and/or eliminate the potential for ground water to be impacted by COCs present in refinery waste materials located in the subsurface by removing LNAPL from ground water until the performance standard (a threshold thickness of 0.1 foot of LNAPL, measured using an interface probe in monitoring or extraction wells) is attained, and by removing hydrocarbon-contaminated Surface and Subsurface Soils, containing carcinogenic PAHs at concentrations greater than 1 ppm benzo(a) pyrene(BAP) equivalents, or benzene at concentrations greater than 1 ppm, should they become uncovered.

c. Prevent human ingestion or inhalation of ground water containing Site-related COCs at concentrations which exceed the corresponding non-zero MCLGs (or MCLs where the corresponding MCLGs equal zero) by monitoring to ensure that concentrations of site-related COCs do not exceed remediation goals in Site ground water that may migrate to an area that is not within the area under the jurisdiction of the City's ban on ground water use.

60. In order to demonstrate that the remedial action objectives described in subparagraphs a. and b. of SOW paragraph 59 have been met, the conditions described in the following subparagraphs (a, b, and c) shall be met:

a. The EPA has determined that it is technically impracticable to meet the remediation goals for ground water that underlies the Site. Accordingly, in cooperation with EPA, ground water use restrictions have already been effected by Bossier City. Consequently, as long as the City's ground water use restrictions remain in place, Settling Defendant need not undertake any action toward the remedial action objective for ground water described in subparagraph a. of SOW paragraph 59.

b. Once EPA approves Settling Defendant's finding that there is no more than .1 foot of LNAPL in the subsurface as described in SOW paragraph 56, the Remedial Action will be deemed to have met the remedial action objective and the remediation goal for LNAPL as it relates to ground water (as described in subparagraph b. of SOW paragraph 59).

c. In order to demonstrate that the remedial action objective described in subparagraph c. of SOW paragraph 59 has been met, Settling Defendant shall sample ground water at the perimeter of the contaminated subsurface contamination plume according to the EPA-approved Remedial Action Sampling and Analysis Plan. If Settling Defendant finds, after thirty years of ground water sampling at the perimeter of the contamination plume, that the plume has not moved into areas that are not covered by Bossier City's ground water use restrictions, then the Remedial Action will be deemed to have met the remedial action objective and the remediation goal described in subparagraph c. of SOW paragraph 59.

Operational and Functional

61. Once all the remedial action objectives and remediation goals are deemed to have been met pursuant to the provisions of SOW paragraphs 53 through 60, Settling Defendant may request EPA and LDEQ in writing to determine that the remedy is Operational and Functional. If EPA and LDEQ notify Settling Defendant, in writing, that the remedy is Operational and Functional, then Settling Defendant shall perform Operation and Maintenance (O&M) of the remedy consistent with the EPA-approved O&M plan (which is part of the Remedial Action Work Plan).¹⁸ If EPA and LDEQ do not make a concurrent determination that the remedy is Operational and

¹⁸EPA and LDEQ need not wait until Settling Defendant makes a request to make their determination that the remedy is Operational and Functional. That is, EPA and LDEQ may make their determination without a request.
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Functional, then the remedy becomes Operational and Functional one year after all the remedial action objectives and remediation goals are deemed to have been met pursuant to the provisions of SOW paragraphs 53 through 60, and, then, Settling Defendant shall perform Operation and Maintenance (O&M) of the remedy consistent with the EPA-approved O&M plan (which is part of the Remedial Action Work Plan).

Certification of Completion

62. Upon the completion of the Operational and Functional phase of the entire remedy at the Site, including without limitation O&M, the Settling Defendant shall prepare and submit, to EPA, for EPA review and approval pursuant to Section XI of the CD (EPA Approval of Plans and Other Submissions), a Remedial Action Report which documents that all Work described in the CD, the SOWs and EPA-approved submissions, has been completed. The report shall include a construction chronology, a list of construction modifications, pre-final inspection corrections, documentation substantiating that the remedy component is functioning properly and is performing as designed, and As-Built Drawings of the remedy component.

63. For a description of the Work that Settling Defendant shall undertake to certify completion, see Section XIV of the Consent Decree.